REMARKS

INTRODUCTION:

In accordance with the foregoing, claim 1 has been amended. No new matter is being presented, and approval and entry are respectfully requested.

Claims 1-24 are pending and under consideration. Reconsideration is respectfully requested.

REJECTION UNDER 35 U.S.C. §102:

In the Office Action, at pages 2-3, claims 1, 3, 9, 11, 15, 17, 19-20 and 23 were rejected under 35 U.S.C. §102(B) as being anticipated by Akikusa et al. (USPN 204/0028994 A1; hereafter, Akikusa). This rejection is traversed and reconsideration is requested.

Independent claim 1 has been amended for clarity.

It is respectfully submitted that it is now clear that amended claim 1 discloses a fuel electrode housing that includes a fuel-side electrode film formed on an internal face of the fuel electrode housing, and that an air electrode housing includes an air-side electrode film formed on an internal face of the air electrode housing. That is, according to amended claim 1, the fuel-side electrode film and the air side electrode film are included in, and are not provided separately from, the fuel electrode housing and the air electrode housing, respectively.

Support for the above-cited feature of the present invention may be found in the specification, for example, as follows: "According to the fuel cell 10 of the first embodiment, the metal electrode layers 54 and 66, which are collectors, are formed integrally with the fuel electrode housing 14 and the air electrode housing 16, respectively. Therefore, compared with the conventional fuel cell where the collectors are provided separately from the fuel electrode housing and the air electrode housing, the probability of fuel leakage is reduced in the fuel cell 10. Further, compared with the conventional fuel cell, the number of components is reduced in the fuel cell 10, so that the production cost of the fuel cell 10 can be reduced." (page 17, line 36-page 18, line 11 of the specification).

In contrast, referring to FIG. 1 of Akikusa, a fuel cell 10 appears to have a conventional configuration, where an electric power generation cell 14, a fuel electrode current collector 16, an air electrode current collector 18, and metal separators 17 are simply superposed one on another, as the conventional DMFC 1 described in the specification of the present application, which "is assembled by suerimposing the PEM 2, the fuel electrode 3a, the air electrode 3b, the collectors 4a and 4b, and the end plates 7 and 8" (page 4, lines 7-10). In particular, FIG. 2 and,

for example, paragraph [0051] of Akikusa show that the fuel electrode current collector 16 and the air electrode current collector 18, which are relied on by the Examiner as alleged disclosure of claimed fuel-side and air-side electrode films, are merely disposed on the corresponding metal separators 17, which are relied on by the Examiner as alleged disclosure of claimed fuel and air electrode housings. Therefore, it is respectfully submitted that the fuel cell 10 of Akikusa has the same problem as recited on page 4, lines 9-25, of the specification of the present application.

Thus, Akikusa fails to disclose the subject matter of amended independent claim 1. Hence, it is respectfully submitted that amended claim 1 is not anticipated under 35 U.S.C. §102(B) by Akikusa et al. (USPN 204/0028994 A1). Since claims 3, 9, 11, 15, 17, 19-20 and 23 depend, directly or indirectly, from amended claim 1 of the present invention, claims 3, 9, 11, 15, 17, 19-20 and 23 are not anticipated under 35 U.S.C. §102(B) by Akikusa et al. (USPN 204/0028994 A1) for at least the reasons that amended independent claim 1 is not anticipated under 35 U.S.C. §102(B) by Akikusa et al. (USPN 204/0028994 A1).

REJECTION UNDER 35 U.S.C. §103:

A. In the Office Action, at pages 4-5, claims 2, 4-8, 10, 14, 16, and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Akikusa et al. (USPN 204/0028994 A1; hereafter, Akikusa) in view of Kaneta et al. (USPN 6,699,593 B2; hereafter, Kaneta). The reasons for the rejection are set forth in the Office Action and therefore not repeated. The rejection is traversed and reconsideration is requested.

As noted above, Akikusa teaches a fuel cell that appears to have a conventional configuration, where an electric power generation cell, a fuel electrode current collector, an air electrode current collector, and metal separators are simply superposed one on another, as the conventional DMFC 1 described in the specification of the present application, which "is assembled by superimposing the PEM 2, the fuel electrode 3a, the air electrode 3b, the collectors 4a and 4b, and the end plates 7 and 8" (page 4, lines 7-10). Akikusa teaches that the fuel electrode current collector and the air electrode current collector are merely disposed on the corresponding metal separators, and do not disclose the claimed fuel-side and air-side electrode films of amended claim 1. It is respectfully submitted that Akikusa teaches metal separators, not the claimed fuel and air electrode housings of amended claim 1.

Kaneta teaches a corrosion-resistant metallic member which comprises a metallic base and a thin noble-metal layer deposited on at least part of the metallic base, having been subjected to compression working to reduce the total thickness of the base and the thin layer by 1% or more; and wherein the corrosion-resistant metallic member has been subjected to an

anticorrosive treatment selected from the group consisting of an anticorrosive treatment with a liquid phase containing a peroxide and ozone, and an anticorrosive treatment with an active gas atmosphere.

Thus, even if combined, Akikusa and Kaneta teach a fuel cell that appears to have a conventional configuration, where an electric power generation cell, a fuel electrode current collector, an air electrode current collector, and metal separators are simply superposed one on another. Akikusa and Kaneta, if combined, merely dispose the fuel electrode current collector and the air electrode current collector on the corresponding metal separators and do not disclose fuel-side and air-side electrode films, and the metal separators do not disclose fuel and air electrode housings, as are recited in amended claim 1 of the present invention. Akikusa and Kaneta do not teach or suggest that, compared with the conventional fuel cell, the number of components is reduced in the fuel cell of amended claim 1 of the present invention, so that the production cost of the fuel cell is reduced in the present claimed invention.

Hence, amended claim 1 of the present invention is submitted to be patentable under 35 U.S.C. §103(a) over Akikusa et al. (USPN 204/0028994 A1) in view of Kaneta et al. (USPN 6,699,593 B2). Since claims 2, 4-8, 10, 14, 16, and 18 depend, directly or indirectly, from amended claim 1, claims 2, 4-8, 10, 14, 16, and 18 are patentable under 35 U.S.C. §103(a) over Akikusa et al. (USPN 204/0028994 A1) in view of Kaneta et al. (USPN 6,699,593 B2), alone or in combination, for at least the reasons that amended claim 1 is patentable under 35 U.S.C. §103(a) over Akikusa et al. (USPN 204/0028994 A1) in view of Kaneta et al. (USPN 6,699,593 B2).

B. In the Office Action, at pages 5-6, claim 13 was rejected under 35 U.S.C. §103(a) as being unpatentable over Akikusa et al. (USPN 204/0028994 A1; hereafter, Akikusa) in view of Wakahoi et al. (USPN 6,602,632 B2; hereafter, Wakahoi). The reasons for the rejection are set forth in the Office Action and therefore not repeated. The rejection is traversed and reconsideration is requested.

As noted above, Akikusa teaches a fuel cell that appears to have a conventional configuration, where an electric power generation cell, a fuel electrode current collector, an air electrode current collector, and metal separators are simply superposed one on another, as the conventional DMFC 1 described in the specification of the present application, which "is assembled by superimposing the PEM 2, the fuel electrode 3a, the air electrode 3b, the collectors 4a and 4b, and the end plates 7 and 8" (page 4, lines 7-10). Akikusa teaches that the fuel electrode current collector and the air electrode current collector are merely disposed on the corresponding metal separators, and do not disclose the claimed fuel-side and air-side electrode

films of amended claim 1. It is respectfully submitted that Akikusa teaches metal separators, not the claimed fuel and air electrode housings of amended claim 1.

Wakahoi teaches a sealing member for a fuel cell which comprises a pair of electrodes which sandwich an electrolyte membrane on both its sides, and a pair of separators which sandwich said electrolyte membrane on both its outer sides, wherein, said sealing member being formed, in cross section, with a pair of cutaway portions in symmetrical positions with respect to the center of a chord portion of a generally semicircular shaped sealing member main body.

Thus, even if combined, Akikusa and Wakahoi do not teach or suggest a fuel cell, comprising: a membrane electrode assembly (MEA) including a polyelectrolyte membrane having first and second sides to which a fuel electrode and an air electrode are joined, respectively; a fuel electrode housing including a fuel channel and a fuel-side electrode film formed on an internal face of the fuel electrode housing; and an air electrode housing having an air passage formed therein, the air electrode housing including an air-side electrode film formed on an internal face of the air electrode housing, wherein: said fuel electrode housing is joined to said MEA with the internal face thereof facing the fuel electrode of said MEA so that the fuel-side electrode film is electrically connected to the fuel electrode; and said air electrode housing is joined to said MEA with the internal face thereof facing the air electrode of said MEA so that the air-side electrode film is electrically connected to the air electrode, as is recited in amended claim 1 of the present invention.

Hence, it is respectfully submitted that amended claim 1 of the present invention is patentable under 35 U.S.C. §103(a) over Akikusa et al. (USPN 204/0028994 A1) in view of Wakahoi et al. (USPN 6,602,632 B2). Since claim 13 depends from amended claim 1, claim 13 is patentable under 35 U.S.C. §103(a) over Akikusa et al. (USPN 204/0028994 A1) in view of Wakahoi et al. (USPN 6,602,632 B2) for at least the reasons that amended claim 1 is patentable under 35 U.S.C. §103(a) over Akikusa et al. (USPN 204/0028994 A1) in view of Wakahoi et al. (USPN 6,602,632 B2).

C. In the Office Action, at pages 6-8, claims 12, 21-22 and 24 were rejected under 35 U.S.C. §103(a) as being unpatentable over Akikusa et al. (USPN 204/0028994 A1; hereafter, Akikusa) in view of Schnacke et al. (USPN 4,510,213; hereafter, Schnacke) and further in view of Kaneta et al. (USPN 6,699,593 B2; hereafter, Kaneta). The reasons for the rejection are set forth in the Office Action and therefore not repeated. The rejection is traversed and reconsideration is requested.

As noted above, Akikusa teaches a fuel cell that appears to have a conventional configuration, where an electric power generation cell, a fuel electrode current collector, an air

electrode current collector, and metal separators are simply superposed one on another, as the conventional DMFC 1 described in the specification of the present application, which "is assembled by superimposing the PEM 2, the fuel electrode 3a, the air electrode 3b, the collectors 4a and 4b, and the end plates 7 and 8" (page 4, lines 7-10). Akikusa teaches that the fuel electrode current collector and the air electrode current collector are merely disposed on the corresponding metal separators, and do not disclose the claimed fuel-side and air-side electrode films of amended claim 1. It is respectfully submitted that Akikusa teaches metal separators, not the claimed fuel and air electrode housings of amended claim 1.

Schnacke teaches a sealing means for preventing cross leakage of reactant gases between electrodes of opposite polarity in an electrolytic cell, said cell includes, in an axially aligned stack of components, first and second electrodes of opposite polarity, a porous medium for electrolyte separating said electrodes, a separator sheet in electrical communication with at least one electrode for the separation of an adjacent cell in a stack of cells, and first and second manifold passages for providing first and second reactant fluids to said first and second electrodes respectively, said sealing means comprising: first and second transition frames in said stack of components supporting marginal surfaces of said porous electrolyte medium beyond the electrode edges and extending outwardly beyond said medium edges to said manifold passages, said transition frames including base walls generally parallel to major surfaces in said stack of components and perimetric side walls extending axially from the base walls to circumscribe said manifold passages, sealing rings disposed between said first and second transition frames outwardly from said porous electrolyte medium and generally coaxially with said manifold passages, and first and second extension lips bonded at proximal portions thereof to base walls of said transition frames at the marginal surfaces of said electrolyte medium and extending outwardly beyond said medium edges to sealingly fasten at distal portions thereof to said sealing rings whereby cross leakage of said first and second reactant fluids in minimized. However, Schnacke does not teach or suggest the fuel cell of amended claim 1 of the present invention.

Kaneta teaches a corrosion-resistant metallic member which comprises a metallic base and a thin noble-metal layer deposited on at least part of the metallic base, having been subjected to compression working to reduce the total thickness of the base and the thin layer by 1% or more; and wherein the corrosion-resistant metallic member has been subjected to an anticorrosive treatment selected from the group consisting of an anticorrosive treatment with a liquid phase containing a peroxide and ozone, and an anticorrosive treatment with an active gas atmosphere. However, Kaneta does not teach or suggest the fuel cell of amended claim 1 of the present invention.

Even if combined, Akikusa, Schnacke, and Kaneta do not teach or suggest a fuel cell, comprising: a membrane electrode assembly (MEA) including a polyelectrolyte membrane having first and second sides to which a fuel electrode and an air electrode are joined, respectively; a fuel electrode housing including a fuel channel and a fuel-side electrode film formed on an internal face of the fuel electrode housing; and an air electrode housing having an air passage formed therein, the air electrode housing including an air-side electrode film formed on an internal face of the air electrode housing, wherein: said fuel electrode housing is joined to said MEA with the internal face thereof facing the fuel electrode of said MEA so that the fuel-side electrode film is electrically connected to the fuel electrode; and said air electrode housing is joined to said MEA with the internal face thereof facing the air electrode of said MEA so that the air-side electrode film is electrically connected to the air electrode, as is recited in amended claim 1 of the present invention.

Hence, amended claim 1 of the present invention is submitted to be patentable under 35 U.S.C. §103(a) over Akikusa et al. (USPN 204/0028994 A1) in view of Schnacke et al. (USPN 4,510,213) and further in view of Kaneta et al. (USPN 6,699,593 B2). Since claim 13 depends from amended claim 1, claim 13 is patentable under 35 U.S.C. §103(a) over Akikusa et al. (USPN 204/0028994 A1) in view of Schnacke et al. (USPN 4,510,213) and further in view of Kaneta et al. (USPN 6,699,593 B2) for at least the reasons that amended claim 1 is patentable under 35 U.S.C. §103(a) over Akikusa et al. (USPN 204/0028994 A1) in view of Schnacke et al. (USPN 4,510,213) and further in view of Kaneta et al. (USPN 6,699,593 B2).

CONCLUSION:

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot, and further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned attorney for a telephone interview to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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